house officers have put many general practitioners off. "GP trainees are reared on a diet of abnormality and fear. It's surprising they are not put off maternity care for life," he said. "GPs do not have the experience of helping midwives at home. The government may decide that a medical component in the community is unnecessary—all that is needed is a fast ambulance and an open road. It will probably just ask GPs to do their best."

Encouraging the obstetricians

Consumer groups would also like more women obstetricians. Only 12% of consultants are women. The percentage has remained unchanged for 25 years. Recently, obstetric training programmes have been undersubscribed by both sexes. To Wendy Savage, consultant obstetrician at the Royal London Hospital, this means that the restructuring of training is necessary. "It can take 13 years to reach consultancy. We should shorten it to six, making it more structured and geographically based so married couples know where they will be for the next few years," she said. "We need more psychological input so that we develop doctors who can talk to women. We must get away from the myth that trainees will learn enough if we extend their training for long enough."

How to implement change

If consumers and providers want more choice in maternity care they will have to influence the purchasers. Barbara Stocking, director of the King's Fund Centre, spoke of the need to adopt a variety of methods to change practices. "It is not enough to feed information back to people," she explains, "you have to exert peer pressure through audit and external incentives in the way the government has done in providing GPs with immunisation targets. Opinion leaders must be convinced to change their practice. Consumers must get hold of research on which to base their case.

"It is important to involve people and to remove the stumbling blocks. Often people feel insecure about changes at work. They need to know how it will affect them—for instance, will it mean they go home later? They may need retraining. People need to be convinced to base practice on evidence."

Conclusions

In the 1990s pregnancy care looks set to become more community based, with continuity of care a major component. This is likely to be the cheapest option for purchasers and the most desirable one for consumer groups. What providers of pregnancy care must ensure is that there is back up in the community in case things go wrong. This may mean that midwives must become skilled in resuscitating the newborn and that general practitioners should make themselves available to attend midwife deliveries.

The public have a high expectation of pregnancy care. The results of bad outcomes will doubtless continue to result in litigation. It is the fear of litigation that encourages intervention on the part of some obstetricians and discourages some midwives from taking responsibility. Whatever happens in the future, it will not take many maternal or perinatal deaths in the community to send pregnancy care back into the hospitals.

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Lesson of the Week

Inhalation of baby powder: an unappreciated hazard

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Talcum powder can cause severe respiratory symptoms in infants; its use should be discouraged and containers should carry a warning and have child proof caps

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The use of talcum powder is part of the traditional care of infants. We report an incident in which accidental inhalation of baby powder caused severe respiratory difficulties and highlight the potential risks of this practice.

Case report

A previously well 12 week old boy inadvertently had baby talcum powder spilt on his face when the container was inverted during a nappy change. He was noted to cough and choke immediately and attempts were made to remove all visible powder deposited in his mouth. He subsequently refused to feed and vomited once.

Four hours later he was admitted to hospital with severe respiratory difficulties; he was centrally cyanosed, grunting, and tachypnoeic and coarse crepitations were audible throughout both lung fields. Analysis of arterial gases showed mixed acidosis (pH 7·09, $Paco_2$ 9·95 kPa, Pao_2 14·4 kPa, bicarbonate concentration 17·1 mmol/l; and base excess −9·4 mmol/l) in 60% facial oxygen. His condition deteriorated 30 minutes after his admission, culminating in a respiratory arrest. Endotracheal intubation was quickly accomplished, but he vomited a quantity of white talc-like material shortly after the airway was secured.

After he was transferred to the intensive care unit at Southampton chest radiography showed that the right main bronchus had been intubated. The left lung was collapsed but reaeration was shown 34 hours after intubation. The right lung showed significant and persistent radiological changes. Subsequent ventilation with paralysis and sedation was uneventful; steroids were commenced intravenously and bronchoscopy the following day gave normal results. He was extubated three days later and on follow up at four months remained well, although some intermittent wheezing persisted. There was a family history of asthma.

Discussion

Talcum powder consists of finely ground magnesium silicate; zinc and magnesium stearate may be present as well. The therapeutic use of talc in the pleural cavity and the pulmonary effects of long term industrial exposure are well described.[1]

Thirty cases of symptomatic talcum powder inhalation, occurring predominantly in infants and preschool children, have been described (including this case). Eight deaths have been attributed to inhalation of baby powder,[2-6] and many household incidents associated with baby powders have been reported to poison centres (table), accounting for up to 1% of all calls concerning children under 5 years.[3,7] Many inhalation incidents have been reported to have

Household incidents associated with talcum powder reported to poison centres

Poison centre	No of incidents reported/time studied	% Of subjects with symptoms
New York Poison Control Center, 1969[8]	About 50/year	Not reported
Nassau County Poison Control Center, 1981[3]	40/6 months	50
Massachusetts Poison Control System, 1982[7]	65/3 months	62
American Association of Poison Control Centers, 1986[9]	2110/year (children <6 years)	28
National Poisons Information Service, London, 1976-89	56/14 years (children <5 years)	7

occurred during a nappy change[3 7]—a time when adult surveillance should be high. Entertaining or distracting a young child with a powder container seems to be especially hazardous. Accidental inversion of the container causing inhalation of talcum powder and older children mimicking the use of powder on a sibling have also been described.[2 4 6]

Careful respiratory monitoring is indicated in children suspected to have inhaled talcum powder as the onset of symptoms may be delayed (as in our case) for several hours.[10 11] Steroids are thought to be beneficial and bronchoalveolar lavage has been advocated but remains controversial. The long term pulmonary prognosis can be favourable,[5] but two cases in which children have had chronic respiratory symptoms have been attributed to inhalation of powder.[11 12] Inhalation of cornstarch based powder has not been reported,[5] and its use instead of talcum powder merits further study.

There is little dermatological evidence for using non-medicated powders in routine skin care of infants.[13] Parents may believe that these products prevent nappy rash or confer a germicidal benefit.[14] An American survey found that 69% of parents used powder regularly on young children,[14] and we suspect that the use of powder is similarly widespread in Britain. Much of the promotional material available to parents continues to mention or encourage the use of talcum powder with little advice on safe use or warning regarding the risk of inhalation. The main books on child care contain appropriate advice regarding the paucity of indications for the use of talcum powder and give warnings about the risks of powder inhalation.[15-17]

Only one of the nine commonly available brands of baby talcum powder in Britain carries appropriate advice and warnings. All containers have large holes capable of delivering 0·4-1·7 g of powder by simply inverting the container, which may be dangerous given the risk of accidental inversion. One manufacturer has incorporated a flip top cap, but this is not an obviously child proof design. A child proof container for baby powder would help minimise the potential risks of this product.

We believe that health workers should discourage routine use of talcum powder. Infants can be adequately dried after bathing with a warmed absorbent towel, paying particular attention to the skin creases. Any residual moisture usually evaporates quickly. Barrier creams are more appropriate for the area covered by the nappy. Talcum powder may have a minor role as a drying agent in obese infants prone to chafing and irritation at skin folds. Unless attention is paid to careful hygiene the non-absorbable nature of talcum powder can itself lead to further skin irritation.[13]

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ANY QUESTIONS

If a woman loses her baby because of listeria infection during pregnancy is there any chance that the infection will cause problems in subsequent pregnancies?

A woman who has suffered from listeriosis in one pregnancy may be confidently assured that subsequent pregnancies will be unaffected. The concept of colonisation of the genital tract by *Listeria monocytogenes* followed by recurrent ascending infection has not been substantiated. Listeriosis is now thought to be a foodborne infection, and the fetus becomes infected after maternal bacteraemia, which seeds the placenta. The presence of *L monocytogenes* in the female genital tract usually results from contamination by infected products of conception. The risk of listeriosis in any individual pregnancy is low and has been estimated to be around one per 10 000 pregnancies. In the absence of additional factors affecting immunocompetence the risk in subsequent pregnancies would be expected to be of the same order of magnitude unless the immune response to the initial episode of infection was protective. A small minority of neonatal cases result from nosocomial spread. There were no cases of recurrent infection in a British study of 248 cases of listeriosis associated with pregnancy.[1] Recurrent episodes are reported in non-pregnant compromised patients but not in series of pregnant patients.

Immunity to *L monocytogenes* depends largely on T cell mediated activation of mononuclear phagocytes. Mothers infected during pregnancy have been shown to produce an immunological response to the pathogen, but any contribution this makes to the prevention of subsequent infection is unknown. In immunised pregnant mice an effective immune response does not occur within the placenta, and this may be due to the local immunoregulation which prevents rejection of the placenta by its host.[2] A woman immunised by one episode of listeria infection may, however, be protected against the bacteraemia required to infect the fetus. The recent decline in cases of listeriosis in England and Wales (59 cases reported to the Communicable Disease Surveillance Centre in the first six months of 1990 compared with 152 for the same period in 1989) is good news for all pregnant women.—P BURDEN, *consultant microbiologist, Public Health Laboratory Service, Reading*

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